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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/810,271	03/26/2004	John S. Wang	021795-000210US	8535
20350	7590	09/23/2005	EXAMINER	
TOWNSEND AND TOWNSEND AND CREW, LLP TWO EMBARCADERO CENTER EIGHTH FLOOR SAN FRANCISCO, CA 94111-3834			MEEK, JACOB M	
			ART UNIT	PAPER NUMBER
			2637	

DATE MAILED: 09/23/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/810,271

Applicant(s)

WANG ET AL.

Examiner

Jacob Meek

Art Unit

2637

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 26 March 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1 - 37 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1 - 9, 11 - 14, 17 - 27, 29 - 32, 35 - 37 is/are rejected.
- 7) ☒ Claim(s) 10, 15, 16, 28, 33 and 34 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 13 September 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date <u>3/04</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

1. Claims 1, 3 - 8, 9, 11 – 14, 19, 21 – 25, 26, 27, 29 - 32 and 37 are rejected under 35 U.S.C. 102(b) as being anticipated by Bouillet et al (US-6,490,007).

With regard to claim 1, Bouillet discloses a method for performing adaptive equalization comprising: receiving a FEC encoded signal from a channel (see abstract); filtering the received FEC encoded signal using a filter according to at least one adjustable filter coefficient to produce a filtered signal (see figure 1, 34 and column 3, lines 14 – 20); evaluating the filtered signal to generate a signal error output (see figure 1, 44 and column 2 line 66 – column 3, line 12 where this is inclusive of signal errors); adjusting at least one adjustable filter coefficient in response to signal error output (see column 3, lines 14 – 20), performing FEC decode processing dependent on filtered signal to generate an FEC output (see figure 1, 44 and column 3, lines 14 – 20); and adjusting at least one adjustable filter coefficient in response to FEC output (see column 3, lines 14 – 20).

With regard to claim 3, Bouillet discloses a method the FEC output relates to bit error rate (see column 3, lines 23 – 27 where this is interpreted as being inclusive of BER).

With regard to claim 4, Bouillet discloses a method the FEC output relates to bit error count (see column 3, lines 23 – 27 where this is interpreted as being inclusive of BER).

With regard to claim 5, Bouillet discloses a method wherein the at least one adjustable filter coefficient is adjusted in response to a signal error output (see figure 1, 34 and column 3, lines 14 – 20 where this is inclusive of signal errors); then adjusted in response to FEC output (see column 3, lines 14 – 20).

With regard to claim 6, Bouillet discloses a method wherein the at least one adjustable filter coefficient is adjusted in response to a signal error output until a specified condition is met (see figure 2, 4 where this is inclusive of signal errors); then adjusted in response to FEC output (see column 3, lines 14 – 20).

With regard to claim 7, Bouillet discloses a method wherein the specified condition is based on the signal error output (see figure 2, step 4 and column 2, lines 53 – 65 where this is interpreted as being inclusive of signal errors).

With regard to claim 8, Bouillet discloses a method wherein the specified condition is based on the FEC output (see figure 2, step 4).

With regard to claim 9, Bouillet discloses a method wherein the specified condition relates to an error measure falling below a predetermined value (see figure 2, step 4 where this is interpreted as being inclusive of signal errors).

With regard to claim 11, Bouillet discloses a method wherein the at least one adjustable filter coefficient is again adjusted in response to a signal error output, after being adjusted in response to FEC output (see figure 2, step 1 & 10 and column 2, lines 53 – 65 where this is interpreted as equivalent).

With regard to claim 12, Bouillet discloses wherein the at least one adjustable filter coefficient is selectively adjusted in response to signal error output or the FEC output (see column 3, lines 14 – 20).

With regard to claim 13, Bouillet discloses wherein the selective adjustment in response to signal error output or the FEC output is selected based on a measurement of time dependent variation of the channel (see column 3, lines 45 – 67).

With regard to claim 14, Bouillet discloses a method of generating a plurality of symbols from filtered signal based on a symbol decision clock and a symbol decision threshold, wherein the FEC decode processing is performed on the symbols (see figure 1, 22, 24 and column 3, lines 6 – 12).

With regard to claims 19, 21 – 25, 26, 27, 29 – 32, Bouillet discloses an apparatus implementing the method of claims 1, 2 – 8, 9, 12 – 14, and therefore would have been obvious given the aforementioned rejection of claims 1, 2 – 8, 9, 12 – 14.

With regard to claim 37, Bouillet discloses a system implementing the method of claim 1, and therefore would have been obvious given the aforementioned rejection of claims 1.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 2, and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bouillet ('007) in view of Endres et al (US-6,418,164).

With regard to claim 2, Bouillet is silent with respect the details of his method's equalizer algorithm. Endres teaches an implementation of an adaptive equalizer using LMS (see '164, column 2, lines 15 – 23 where LMS is a form of MSE). It would have been obvious to one of

ordinary skill in the art at the time of invention that LMS would be applicable for the purposes of equalization algorithm.

With regard to claims 20, Boulliet discloses an apparatus implementing the method of claims 2, and therefore would have been obvious given the aforementioned rejection of claims 2.

3. Claims 17, 18, 35, 36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bouillet ('007) in view of Everitt (US-5,880,645).

With regard to claim 17, Boulliet is silent with respect to his method using an equalizer being a controllable analog equalizer. Everitt teaches that implementations of adaptive equalizers are known in many analog forms (see '645, column 4, lines 5 – 9). It would have been obvious to one of ordinary skill in the art at the time of invention that an analog equalizer would be applicable for the purposes of equalization.

With regard to claim 18, Boulliet is silent with respect to his method using an equalizer being a controllable digital equalizer. Everitt teaches that implementations of adaptive equalizers are known in many analog forms (see '645, column 4, lines 5 – 9). It would have been obvious to one of ordinary skill in the art at the time of invention that a digital equalizer would be applicable for the purposes of equalization.

With regard to claims 35, 36, Boulliet discloses an apparatus implementing the method of claims 17, 18, and therefore would have been obvious given the aforementioned rejection of claims 17, 18.

Allowable Subject Matter

4. Claims 10, 15, 16, 28, 33, 34 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Other Cited Prior Art

5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Caloyannides (US-4,032,762), Tsui (US-6,385,237), Shalvi (US-6,647,070), Goldston (US-6,570,943), Trans (US-6,904,110), and Park (US-2005/012,907) all disclose variations of adaptive equalization germane to applicant's area of endeavor.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jacob Meek whose telephone number is (571)272-3013. The examiner can normally be reached on 8:00 - 4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jay Patel can be reached on (571)272-2988. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 2637

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

JMM
9/17/05



JAY K. PATEL
SUPERVISORY PATENT EXAMINER